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MCA

MANUFACTURING CHEMISTS ASSOCIATION

1825 CONNECTICUT AVENUE, N.W. WASHINGTON, D. C. 20009 (202) 483-6126

November 11, 1975

To: Technical Panel on Vinyl Chloride Research

Subject: Meeting on December 11, 1975, 9:00 a.m. at MCA Headquarters,
Washington, D.C., Room #407

Gentlemen:

Enclosed is the tentative agenda for the subject meeting. Please note, you will be asked to vote on the question of granting permission to IBT to publish their results in accord with the letter from Dr. Keplinger I forwarded to you October 21.

It has been called to my attention that section 12 of the minutes of the last meeting, which deals with division of effort between MCA and SPI, is intended to relate only to administration and support of scientific studies and was not meant to apply to direct liaison with regulatory agencies.

Sincerely,

Milton Freifeld
Milton Freifeld
Project Manager

MF/mj

Enclosure (1)



MANUFACTURING CHEMISTS ASSOCIATION

1825 CONNECTICUT AVENUE, N.W. WASHINGTON, D.C. 20009 (202) 483-6126

November 26, 1975

To: Technical Panel on Vinyl Chloride Research

Subject: Information Items

Gentlemen:

Please add the following items to your tentative agenda for the December 11 meeting:

- 5.2 Vote on acceptance of Industrial BIO-TEST's (IBT) September 23 report distributed September 30.
- 5.3 Vote on IBT request for \$20,000 reimbursement.
- 6.1 Vote on acceptance of final report on metabolism from Dow.

Enclosed for your information are the following:

- a. Most recent version, (November 12, 1975) of NIOSH Table I "Reported Cases of Angiosarcoma of the Liver Among Vinyl Chloride Polymerization Workers."
- b. Selected parts of pre-publication copy of EPA report on "Dynamic Behavior of Vinyl Chloride in Aquatic Ecosystems" - only title page, abstract, contents, conclusion and recommendations.

Sincerely,

Milton Freifeld

Milton Freifeld
Project Manager
Vinyl Chloride Research

MF/mj

Enclosures (2)

*add to the
doc travel folder*

SCC
5-0252

NIOSH
November 12, 1975

TABLE I

REPORTED CASES OF ANGIOSARCOMA OF THE LIVER AMONG
VINYL CHLORIDE POLYMERIZATION WORKERS

COUNTRY	CASE #	BIRTH DATE	1st VC or PVC EXPOSURE	DX ANGIO-SARCOMA	AGE AT DX	YRS 1st EXP TO DX	TOT YRS EXP	DATE OF DEATH
Canada	01*	AWAITING DETAILS						
Canada	02*	AWAITING DETAILS						
Canada	03*	AWAITING DETAILS						
Canada	04*	AWAITING DETAILS						
Canada	05*	AWAITING DETAILS						
Canada	06*	AWAITING DETAILS						
Canada	07*	AWAITING DETAILS						
Canada	08	AWAITING DETAILS						
Canada	09	AWAITING DETAILS						
Canada	10	AWAITING DETAILS						
Czechoslovakia	01*	00-00-28	00-00-57	00-00-73	46	16	16	00-00-74
Czechoslovakia	02*	00-00-26	00-00-51	00-00-66	40	15	15	00-00-66
Fed. Rep. Germany	01*	07-26-31	10-14-57	09-25-70	40	13	12	12-14-71
Fed. Rep. Germany	02*	06-24-30	10-01-57	09-19-68	38	11	11	01-25-69
Fed. Rep. Germany	04	09-04-30	04-16-57	00-00-74	44	17	11	11-25-74
Fed. Rep. Germany	05*	04-28-25	02-00-57	07-00-74	49	17	12	ALIVE
Fed. Rep. Germany	06*	01-01-32	07-26-62	00-00-75	43	13	12	01-09-75
France	01*	04-15-24	01-00-46	02-18-67	43	21	19	02-19-67
France	02	06-03-11	07-06-59	01-08-75	63	15	12	01-24-75
France	03*	00-00-19	00-00-46	01-00-75	55	29	29	ALIVE
Great Britain	01*	00-00-01	00-00-46	12-00-72	71	26	20	12-00-72
Great Britain	03	05-02-37	02-00-66	00-00-74	37	9	4	12-24-74
Italy	02*	11-13-29	00-00-57	12-13-72	43	15	6	12-00-72
Italy	03*	03-14-20	00-00-53	07-10-75	55	22	21	07-10-75
Norway	01*	12-23-15	03-00-50	12-20-71	56	22	21	01-04-72
Sweden	01*	06-23-27	08-14-51	02-00-70	43	19	18	10-20-70

TABLE I (continued)

REPORTED CASES OF ANGIOSARCOMA OF THE LIVER AMONG
VINYL CHLORIDE POLYMERIZATION WORKERS

COUNTRY	CASE #	BIRTH DATE	1st VC or PVC EXPOSURE	DX ANGIO-SARCOMA	AGE AT DX	YRS 1st EXP TO DX	TOT YRS EXP	DATE OF DEATH
United States	01*	10-17-23	12-09-48	03-03-73	49	22	16	03-03-73
United States	02*	08-19-33	11-15-55	05-00-70	37	14	13	09-28-71
United States	03*	05-25-15	11-28-45	12-19-73	58	28	28	12-19-73
United States	04*	01-15-24	07-06-52	08-19-67	43	15	15	01-07-68
United States	05*	01-25-12	06-19-44	04-09-64	52	20	18	04-09-64
United States	06*	00-00-29	01-17-62	02-00-74	45	12	12	07-24-75
United States	07*	05-03-22	08-00-44	00-00-68	45	24	18	03-23-68
United States	08*	05-06-20	10-07-46	08-00-61	41	15	15	03-29-61
United States	09*	11-08-31	09-09-54	03-01-74	43	17	17	03-00-75
United States	10*	08-16-13	06-12-51	05-00-68	55	17	17	05-10-68
United States	11*	05-27-09	10-14-46	03-00-70	61	23	23	03-16-70
United States	12*	11-17-13	09-13-49	05-02-69	50	20	15	05-02-69
United States	13*	12-01-21	08-19-44	05-00-74	52	30	30	07-04-74
United States	16*	11-04-27	05-08-50	00-00-69	41	17	4	03-27-69
United States	17*	05-06-31	06-23-55	10-11-74	43	19	19	ALIVE
United States	18*	04-22-28	00-00-54	00-00-75	46	21	13	11-02-75
United States	19	00-00-15	00-00-43	06-19-75	60	32	32	ALIVE
Yugoslavia	01*	04-05-14	00-00-53	04-08-73	59	20	20	04-08-73
Yugoslavia	02*	11-15-31	00-00-50	07-12-73	42	23	18	07-12-73

Total Reported Cases = 45

Median Values:

17 U.S. Cases

46.0 20.0 17.0

17 Non-U.S. Cases

43.0 17.0 15.0

34 Total Cases

45.0 18.0 16.0

* Indicates microscopically confirmed angiosarcoma of the liver.

"00" Indicates unknown data.

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DYNAMIC BEHAVIOR OF VINYL CHLORIDE
IN AQUATIC ECOSYSTEMS

by

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Heinz P. Kollig
Doris F. Paris
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ROAD 04AEM, Tasks 005 and 009
ROAD 03ACQ, Task 009
Program Element 1BA023

U. S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL RESEARCH LABORATORY
ATHENS, GEORGIA 30601

ABSTRACT

To evaluate the behavior of vinyl chloride in aquatic ecosystems, best estimate and worst case models of lake and stream ecosystems were analyzed through the use of mathematical simulation. The characteristics of the chemical, biological, and physical transformations of vinyl chloride, indicated in the models were determined by laboratory experimentation and extrapolation of reaction data for similar compounds. These transformations included oxidation, substitution, elimination, hydrolysis, and free radical reactions; complexation; direct and indirect photochemical reactions; microbial degradation and toxicity; bacterial, algal, and fungal sorption; and volatilization. Loss of vinyl chloride from the aquatic environment by volatilization appeared to be the most significant process in its distribution.

This report was submitted in fulfillment of ROAP 04AEM, Tasks 005 and 009, and ROAP 03ACQ, Task 009, at the Environmental Research Laboratory, Athens, Georgia. Work was completed as of September 1975.

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SECTION I

CONCLUSIONS AND RECOMMENDATIONS

A worst case system analysis of vinyl chloride behavior in aquatic systems suggests that unrealistically high levels of vinyl chloride inputs would be necessary to maintain significant concentrations in these systems. However, given extreme environmental conditions, aquatic sediments could exhibit long-term storage of low levels of vinyl chloride.

Chemical degradation of vinyl chloride under pH's, reactant concentrations, and temperatures common to the environment should not be significant. Neither auto-oxidation nor degradation by free radicals is important in most natural waters at low vinyl chloride concentrations. Increased persistence of vinyl chloride due to complexation with Ag^+ and Cu^+ should be minimal. Data are not available for consideration of other metal species.

Experiments with distilled water, water from the effluent of a PVC plant, and two natural waters indicate that photolysis of vinyl chloride is probably a slow process under environmental conditions.

Vinyl chloride does not appear to be sorbed by microorganisms, as indicated by laboratory experiments with five mixed bacterial populations, three mixed fungal populations, two axenic bacterial cultures, and one alga. The five mixed bacterial populations did not degrade the vinyl chloride to any detectable extent. Also, at vinyl chloride concentrations up to 900 mg l^{-1} , no toxic effects on the bacterial cultures could be detected.

The rate of bulk exchange of gaseous vinyl chloride between atmosphere and water is about twice that of oxygen. Loss of vinyl chloride by volatilization from water is therefore probably the most significant process in its distribution.

The assumptions and consequently the conclusions of this analysis may be invalid when vinyl chloride enters a receiving water as a component of a tar or sludge or when large concentrations of surface active agents are present with the vinyl chloride in water. Further study is necessary for specific situations where these conditions exist.

The reactions of vinyl chloride with chlorine and hypochlorous acid should be studied under conditions that prevail in the chlorination processes of municipal water treatment plants. Also, the reactions of organics that may form vinyl chloride under these conditions should be studied.

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Manufacturing Chemists Association

Technical Panel on Vinyl Chloride Research

9:00 a.m. MCA Headquarters, Room #404 December 11, 1975

Washington, D. C.

Tentative Agenda

1. Minutes of Last Meeting
2. Financial Status (Freifeld)
3. Selection of Vice Chairman
4. Review of Epidemiological Studies
 - 4.1 TCA
 - 4.2 Other Studies (Torkelson)
5. Review of Industrial BIO-TEST Studies
 - 5.1 Vote on Request for Permission to Publish Results
6. Review of Dow Studies
7. Review of Responses to Questionnaire on PVC Dust (Freifeld)
8. Revision of SDS
9. University of Louisville Proposal (Dr. Tamburro)
10. Future Meetings
11. Next Meeting